

Work Order ID 57556

April 8, 2010 10:03:36 AM



Page 1

Item ID: D2939-1

Accept



Setup Start



Revision ID:

Stop



Item Name: Saddle LH In, 206

Start Date: 4/08/10 Start Qty: 4.00



Cust Item ID:

Required Date: 4/16/10 Req'd Qty: 4.00



Customer:

Reference:

Handwritten signature and date 4/10/04

Approvals:

Process Plan:

Date:

Tooling:

Date:

Run Start



QC:

Date:

SPC (Y/N):

Date:

Stop



| Sequence ID/ Work Center ID | Operation Description | Set Up/ Run Hours | Draw Number | Draw Rev. | Plan Code | Accept Qty | Reject Qty | Reject Number | Insp. Stamp |
|--------------------------------|--------------------------|----------------------|----------------|--------------|--------------|---------------|---------------|------------------|----------------|
|--------------------------------|--------------------------|----------------------|----------------|--------------|--------------|---------------|---------------|------------------|----------------|

Draw Nbr

Revision Nbr

D2939 /

Rev C

100

0.00



HAAS CNC VERTICAL MACHINING #1

HAAS I

Memo

0.00

HAAS CNC vertical machine #1

Program part number and batch number. ☐ 1-Inspect part number and batch number are programmed correctly. ☐ 2-Machine Step No 1 of Folio and visually inspect as per dwg D2939 & attached Dimension Sheet ☐ 3-Machine Step No 2 of Folio and visually inspect as per

Handwritten: G.A 10/04/11

Handwritten: 4 0

110

0.00



CONVENTIONAL MILLING MACHINE

Mill Conv

Memo

0.00

Conventional Milling Machine

Machine Keyway and inspect per attached dimension sheet

~~*Handwritten: G.A 10/04/11*~~

Handwritten: G.A 10/04/15

Handwritten: 4 0

120

0.00



QC1- Inspect dimensions to dimension sheet

QC

Memo

0.00

Quality Control

Handwritten: G.A 10/04/11

Handwritten: 4 0

| W/O: | | WORK ORDER CHANGES | | | | | |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE | By | Date | Qty | Approval Chief Eng / Prod Mgr | Approval QC Inspector |
| | | | | | | | |
| | | | | | | | |

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

| NCR: | | WORK ORDER NON-CONFORMANCE (NCR) | | | | | | |
|------|------|----------------------------------|-----------------------------|---------------------------------|----------------|---------------------------|-----------------------|--------------------------|
| DATE | STEP | Description of NC Section A | Corrective Action Section B | | | Verification Section C | Approval Chief Eng | Approval QC Inspector |
| | | | Initial Chief Eng | Action Description Chief Eng | Sign & Date | | | |
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NOTE: Date & initial all entries

Work Order ID 57556

April 8, 2010 10:03:36 AM



Page 2

Item ID: D2939-1

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Revision ID:

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Start Date: 4/08/10 Start Qty: 4.00



Cust Item ID:

Required Date: 4/16/10 Req'd Qty: 4.00



Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Run Start



QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop



Sequence ID/
Work Center ID

Operation
Description

Set Up/
Run Hours

Draw
Number

Draw
Rev.

Plan
Code

Accept
Qty

Reject
Qty

Reject
Number

Insp.
Stamp

130

QC8- Inspect parts - second check

0.00



QC

Memo

0.00

Quality Control

140

Chemical Conversion Coat per QSI005 4.1

0.00



HandFinish

Memo

0.00

Hand Finishing

150

White Gloss(Ref:4.3.5.1) per QSI005 4.3-Alum

0.00



Powdercoat

Memo

0.00

Powder Coating

START TIME: 10:15am OVEN TEMPERATURE:
10:45am FINISH TIME: 320°F

| W/O: | | WORK ORDER CHANGES | | | | | |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE | By | Date | Qty | Approval Chief Eng / Prod Mgr | Approval QC Inspector |
| | | | | | | | |
| | | | | | | | |

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

| NCR: | | WORK ORDER NON-CONFORMANCE (NCR) | | | | | | |
|------|------|----------------------------------|-----------------------------|---------------------------------|----------------|---------------------------|-----------------------|--------------------------|
| DATE | STEP | Description of NC Section A | Corrective Action Section B | | | Verification Section C | Approval Chief Eng | Approval QC Inspector |
| | | | Initial Chief Eng | Action Description Chief Eng | Sign & Date | | | |
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NOTE: Date & initial all entries

Work Order ID 57556

April 8, 2010 10:03:37 AM



Page 3

Item ID: D2939-1

Accept



Setup Start



Revision ID:

Stop



Item Name: Saddle LH In, 206

Start Date: 4/08/10 Start Qty: 4.00



Cust Item ID:

Required Date: 4/16/10 Req'd Qty: 4.00



Customer:

Reference:

Run Start



Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Stop



QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Sequence ID/
Work Center ID

Operation
Description

Set Up/
Run Hours

Draw
Number

Draw
Rev.

Plan
Code

Accept
Qty

Reject
Qty

Reject
Number

Insp.
Stamp

160

QC3- Inspect Part Finish

0.00



QC

Memo

0.00

Quality Control

④

BR 10-4-19

170

Identify as per dwg & Stock Location: 428A

0.00



Packaging

Memo

0.00

Packaging

P 10/4/20 E

180

QC21- Final Inspection - Work Order Release

0.00



QC

Memo

0.00

Quality Control

10/04/20 J

MF 10-4-20

| W/O: | | WORK ORDER CHANGES | | | | | |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE | By | Date | Qty | Approval Chief Eng / Prod Mgr | Approval QC Inspector |
| | | | | | | | |
| | | | | | | | |

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

| NCR: | | WORK ORDER NON-CONFORMANCE (NCR) | | | | | | |
|------|------|----------------------------------|-----------------------------|---------------------------------|----------------|---------------------------|-----------------------|--------------------------|
| DATE | STEP | Description of NC Section A | Corrective Action Section B | | | Verification Section C | Approval Chief Eng | Approval QC Inspector |
| | | | Initial Chief Eng | Action Description Chief Eng | Sign & Date | | | |
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| | | | | | | | | |

NOTE: Date & initial all entries

Picklist Print

April 8, 2010 10:03:35 AM

Page 1

Work Order ID: 57556



Parent Item: D2939-1



Parent Item Name: Saddle LH In, 206

Start Date: 4/08/10

Required Date: 4/16/10

Comments: IPP: B00.06.26 New DWG rev (mpp 2069) EC
IPP Rev: C As per Rev C 07-03-19 JLM

Start Qty: 4.00

Required Qty: 4.00

| Component Item ID/ Item Name | Replacement Item ID | Mfg/ Purch | Bin Item | Primary Location | Last Location | Route Seq ID | Unit of Measure | Qty on Hand | Remaining Qty To Pick | Qty Issued | Date Issued | Status |
|---------------------------------|------------------------|---------------|-------------|---------------------|------------------|-----------------|--------------------|----------------|--------------------------|---------------|----------------|--------|
| D6101-001 | | Manufactured | No | | | 100 | Each | 86.0000 | 4.0000 | | | |



Saddle Billet

| <u>Warehouse</u> | <u>Loc Qty</u> | <u>Loc Code</u> |
|------------------|----------------|-----------------|
| <u>Location</u> | | |
| Main Warehouse | | |
| MAT | 40 | |
| 46409 | 40 | |
| Main Warehouse | | |
| MAT40 | 46 | |
| 46409 | 46 | |

4.0 Y.A 10/04/11

| W/O: | | WORK ORDER CHANGES | | | | | |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE | By | Date | Qty | Approval Chief Eng / Prod Mgr | Approval QC Inspector |
| | | | | | | | |
| | | | | | | | |

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

| NCR: | | WORK ORDER NON-CONFORMANCE (NCR) | | | | | | |
|------|------|----------------------------------|-----------------------------|---------------------------------|----------------|---------------------------|-----------------------|--------------------------|
| DATE | STEP | Description of NC Section A | Corrective Action Section B | | | Verification Section C | Approval Chief Eng | Approval QC Inspector |
| | | | Initial Chief Eng | Action Description Chief Eng | Sign & Date | | | |
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NOTE: Date & initial all entries

| | | |
|----------------------------------------------------|---------------------|--------------------|
| DART AEROSPACE LTD | Work Order: | 57556 |
| Description: 206 Saddle, Inboard, Left side | Part Number: | D2939-1 |
| Inspection Dwg: D2939 Rev. C | | Page 1 of 1 |

Inspect dimensions highlighted on inspection sheet drawing D2939 Rev. C and record below:

| | | | | Recorded Actual Dimensions | | | | | |
|---------------|-------|-------|----------------|----------------------------|-------|-------|-------|----|------|
| Dim | Min | Max | Go/No Go Gauge | 1 | 2 | 3 | 4 | By | Date |
| A | 0.100 | 0.140 | | 0.128 | 0.127 | 0.128 | 0.128 | | |
| B | 0.100 | 0.140 | | 0.128 | 0.127 | 0.128 | 0.128 | | |
| C | 0.100 | 0.140 | | 0.123 | 0.118 | 0.123 | 0.122 | | |
| D | 0.210 | 0.230 | | 0.226 | 0.225 | 0.225 | 0.215 | | |
| E | 1.245 | 1.255 | | 1.250 | 1.250 | 1.250 | 1.250 | | |
| F | 1.245 | 1.255 | | 1.250 | 1.250 | 1.250 | 1.250 | | |
| G | 2.495 | 2.505 | | 2.500 | 2.500 | 2.500 | 2.500 | | |
| H | 0.510 | 0.515 | | 0.511 | 0.511 | 0.511 | 0.511 | | |
| I | 1.572 | 1.582 | | 1.577 | 1.577 | 1.577 | 1.577 | | |
| J | 2.495 | 2.505 | | 2.500 | 2.500 | 2.500 | 2.500 | | |
| K | 0.257 | 0.262 | | 0.260 | 0.260 | 0.260 | 0.260 | | |
| L | 0.312 | 0.317 | | 0.315 | 0.315 | 0.315 | 0.315 | | |
| M | 0.235 | 0.240 | | 0.240 | 0.240 | 0.237 | 0.238 | | |
| N | 0.100 | 0.140 | | 0.110 | 0.110 | 0.110 | 0.110 | | |
| O | 0.540 | 0.560 | | 0.548 | 0.548 | 0.548 | 0.548 | | |
| P | 0.490 | 0.510 | | 0.500 | 0.501 | 0.501 | 0.503 | | |
| Q | 3.715 | 3.725 | | 3.720 | 3.720 | 3.720 | 3.720 | | |
| R | 2.720 | 2.760 | | 2.738 | 2.738 | 2.738 | 2.738 | | |
| S | 0.240 | 0.270 | | 0.255 | 0.255 | 0.255 | 0.244 | | |
| T | 0.100 | 0.180 | | 0.125 | 0.125 | 0.125 | 0.125 | | |
| U | 1.625 | 1.635 | | 1.630 | 1.630 | 1.630 | 1.630 | | |
| V | 1.362 | 1.372 | | 1.367 | 1.367 | 1.367 | 1.367 | | |
| W | 0.316 | 0.321 | | 0.320 | 0.320 | 0.320 | 0.320 | | |
| X | 1.250 | 1.270 | | 1.260 | 1.262 | 1.262 | 1.263 | | |
| Y | 1.565 | 1.585 | DT8695 A/B | 1.577 | 1.579 | 1.579 | 1.580 | | |
| Z | 0.178 | 0.198 | | | | | | | |
| AA | | | | | | | | | |
| AB | | | | | | | | | |
| AC | | | | | | | | | |
| AD | | | | | | | | | |
| AE | | | | | | | | | |
| AF | | | | | | | | | |
| AG | | | | | | | | | |
| AH | | | | | | | | | |
| Accept/Reject | | | | | | | | | |

| | |
|--------------|----------|
| Measured by: | K A |
| Date: | 10/04/11 |

| | |
|-------------|----------|
| Audited by: | |
| Date: | 10/04/15 |

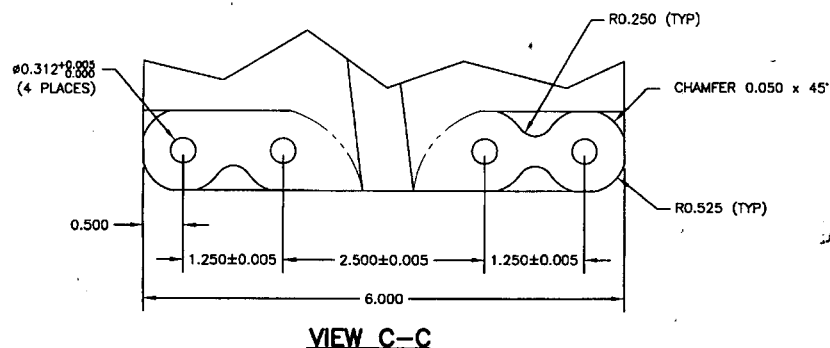
| Rev | Date | Change | Revised by | Approved |
|-----|----------|---------------------------------------------------------------|------------|----------|
| A | | New Issue | RF | |
| B | 02.12.12 | Reformat; Added Dim. X-Y, DT8683, DT8686, DT8690 & DT8695 A/B | KJ/RF | |
| C | 07.03.21 | Revised per drawing revision C | KJ/JLM | |



The value adding parts of the process are obvious, so companies mistakenly focus on trying to make them go faster. The waste is not obvious, so it is not addressed. Lean focuses on eliminating the waste.

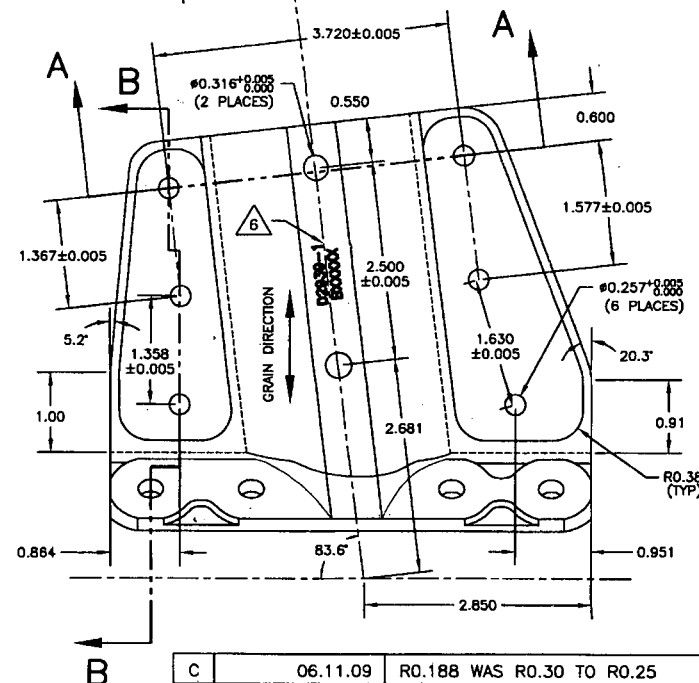
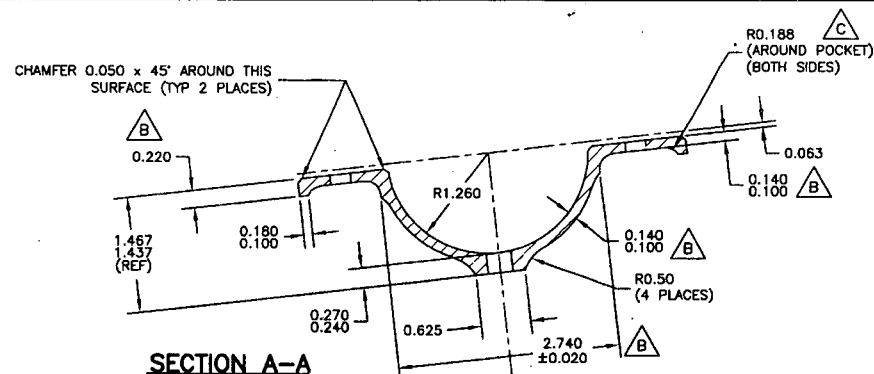
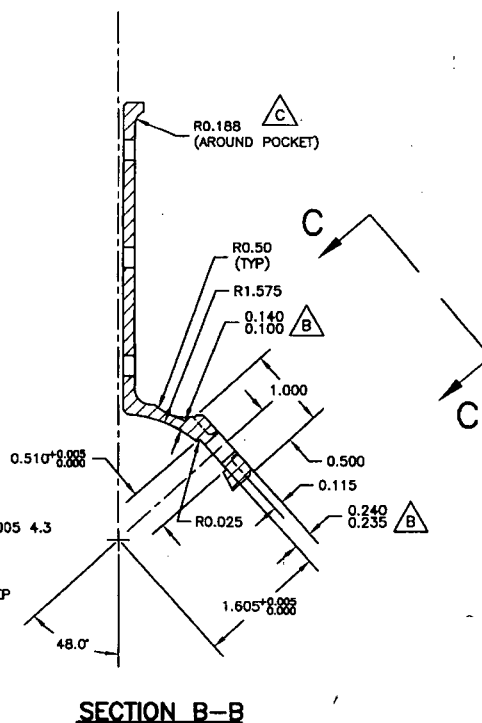
Lean is ongoing, there is no end to the search for waste!

W/0 57556.



D2939-1 LH SADDLE (SHOWN)
D2939-2 RH SADDLE (OPPOSITE)

- NOTES:
- 1) MATERIAL: ALUMINUM 7075-T7351 (QQ-A-250/12)
(MAKE FROM D6101-001 SADDLE BILLET, 7075)
 - 2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
POWDER COAT GLOSS WHITE (REF 4.3.5.1) PER DART QSI 005 4.3
 - 3) BREAK ALL SHARP EDGES 0.010 TO 0.020
 - 4) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED
 - 5) ALL DIMENSIONS ARE INCHES
 - 6) ENGRAVE PART AND BATCH NUMBER IN THIS AREA 0.010 TO 0.015 DEEP



| | | |
|---------|----------|-------------------------------------------------|
| C | 06.11.09 | R0.188 WAS R0.30 TO R0.25 |
| B | 00.05.29 | CHANGED DEOMETRY AND MATERIAL |
| A | 99.11.12 | NEW ISSUE |
| DESIGN | CB | DART DART AEROSPACE USA, INC. BELLINGHAM, WA |
| CHECKED | PH | DRAWING NO. D2939 |
| DATE | 06.11.09 | TITLE SADDLE INSIDE |
| | | REV. C SHEET 1 OF 1 SCALE 2:3 |

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PERSON WITHOUT WRITTEN PERMISSION FROM
DART AEROSPACE USA, INC.

07.02.12



7 deadly wastes

- 1. Overproduction***
- 2. Rework***
- 3. Transportation***
- 4. Inappropriate / over Processing***
- 5. Unnecessary Inventory***
- 6. Delays / Waiting***
- 7. Unnecessary Motions***